EOS Science Networks Performance Report

This is a summary of EOS QA SCF performance testing for the second quarter of 2004 -- comparing the performance against the requirements from BAH, including Terra, TRMM, and QuikScat, Aqua, Aura, SAGE III, and ICESat requirements

Up to date graphical results can be found on the NEW EOS network performance web site (now pretty stable): http://ensight.eos.nasa.gov/active_net_measure.html. Or click on any of the individual site links below.

Highlights:

- Mostly stable performance.
- The May '04 requirements are now used as the basis for the ratings.
- ADEOS 2 requirements have now been removed.

Change History:

- February 2003: Another requirements update from BAH – no major changes
- December 2002: Updated to latest BAH requirements, based on Handbook v1.2. Includes additional missions.
- June 2001: The requirements were modified to incorporate an updated number of EOS funded users at each tested site, based on the latest SPSO database. The total number of users increased in this way from 434 to 1012 (US only).
- May 2001: The requirements were increased by adding a 50% contingency factor to all QA and SIPS requirements, which were omitted with the change to the new BAH requirements in March 2001.

Ratings:

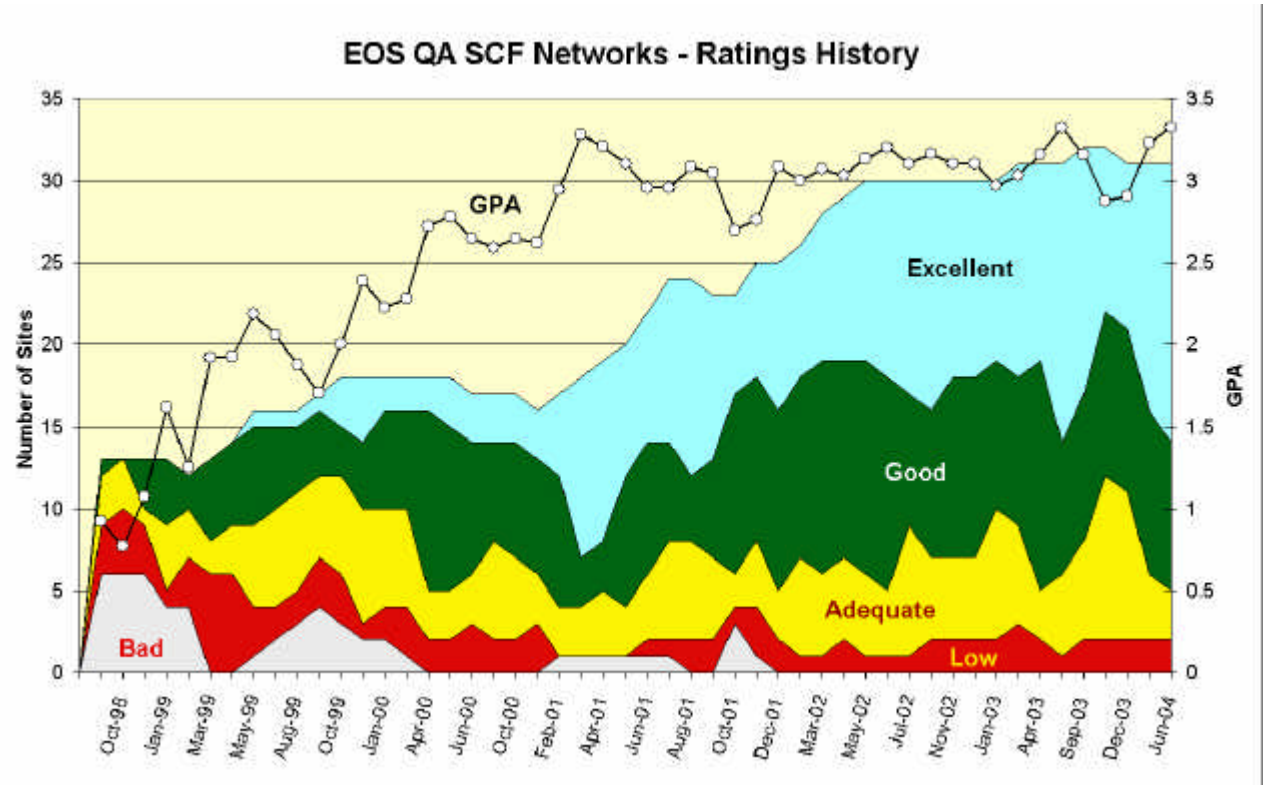
Rating Categories:

Excellent: median of daily worst cases > 3 x requirement
Good: median of daily worst cases > requirement

Adequate: median of daily worst cases < requirement
and
median of daily medians > requirement

Low: median of daily medians < requirement.
Bad: median of daily medians < 1/3 of the requirement.

The chart below shows the number of sites in each classification since the testing started in 1998. Note that these ratings do NOT relate to absolute performance -- they are relative to the EOS requirements. The GPA is calculated based on Excellent: 4, Good: 3, Adequate: 2, Low: 1, Bad: 0



Ratings Changes:

Upgrades: ↑

UCSD: Good → **Excellent**
Colo State: Adequate → **Good**
Ohio State: Adequate → **Excellent**

Downgrades: ↓

NSSTC: Good → **Adequate**
LaRC → JPL: Adequate → **Low**

Testing Resumed:

RSS: **Adequate** (as previously)

Testing Stopped:

INPE (Brazil): Requirement removed due to HSB failure

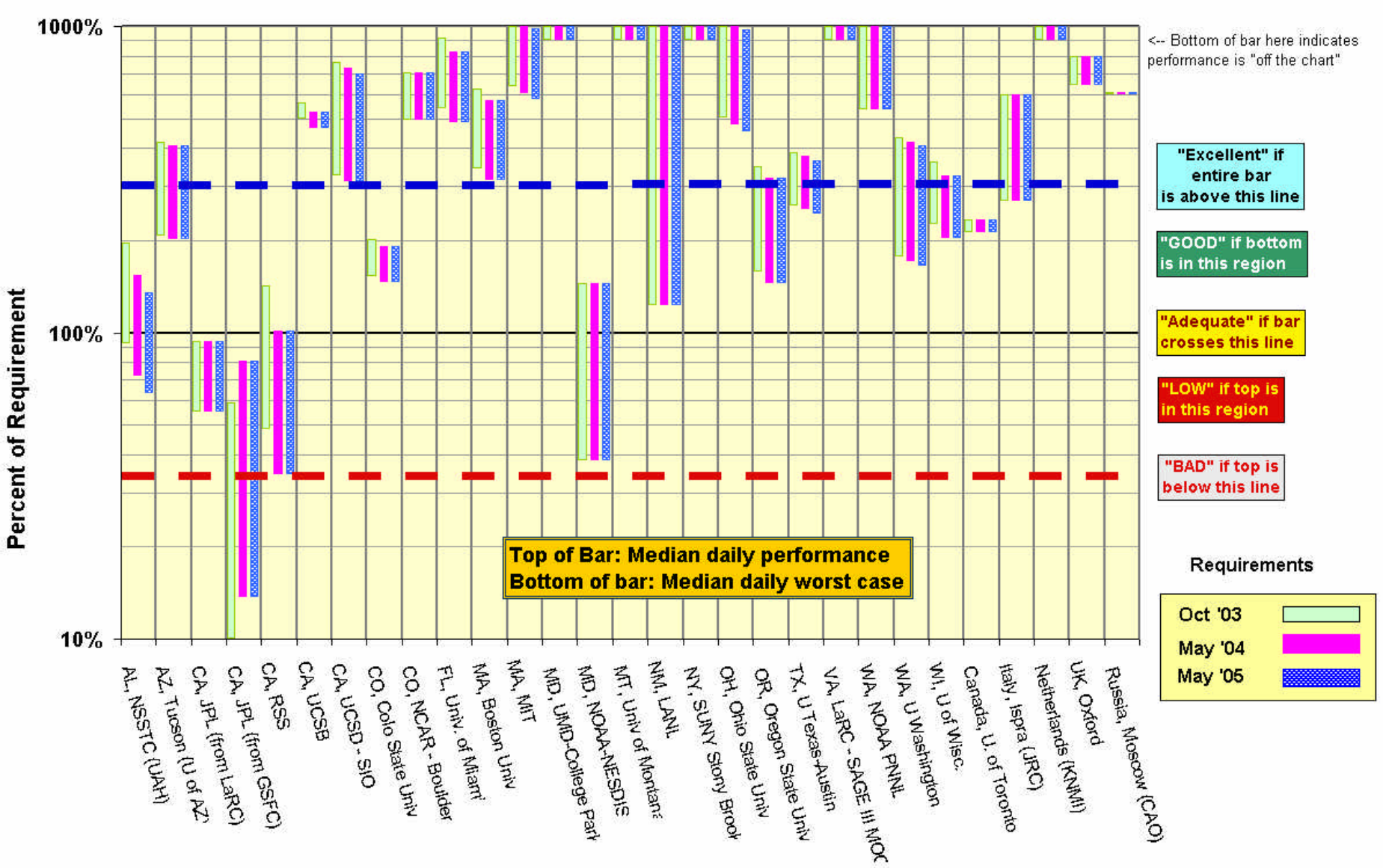
EOS QA SCF Sites: Network Requirements vs. Measured Performance

2 Q 2004		Requirements (kbps)			Testing							
Destination	Team (s)	Previous: Oct-03	Current: May-04	Future: Apr-05	Source Node	Median kbps	Median Daily Worst	Rating re Current Requirements: May-04	Prev	Rating re Apr-05	Route Tested	Upgrade
AL, NSSTC (UAH)	CERES, AMSR-E	4878	6236	7127	LaTIS	9605	4503	Adequate	G	Adequate	NISN + FDDI	
AZ, Tucson (U of AZ)	MODIS, MISR	2750	2811	2811	EDC	11474	5685	GOOD	G	GOOD	Abilene via MAX	
CA, JPL (from LaRC)	MISR	18484	18484	18483	LDAAC	17276	10187	LOW	A	LOW	EMSnet	
CA, JPL (from GSFC)	AIRS, TES, others	24798	18088	18088	GDAAC	14660	2476	LOW	L	LOW	NISN SIP	Increase VC
CA, RSS	AMSR-E	1926	2696	2696	JPL-PODAAC	2741	930	Adequate	n/a	Adequate	2 * T1 - Consolidated	
CA, UCSB	MODIS	2903	3126	3126	GDAAC	16344	14483	Excellent	E	Excellent	Abilene via MAX	
CA, UCSD - SIO	ICESAT, CERES	6478	6792	7107	GSFC-ICESAT	49644	21076	Excellent	G	GOOD	Abilene via NISN / MAX	
CO, Colo State Univ	CERES	2049	2147	2147	LaTIS	4118	3127	GOOD	A	GOOD	NISN -> Abilene	host interface
CO, NCAR - Boulder	MOPITT, HIRDLS	2438	2438	2438	LaRC DAAC	17154	12093	Excellent	E	Excellent	NISN -> Abilene	
FL, Univ. of Miami	MODIS, MISR	16991	18823	18823	GDAAC	155810	91241	Excellent	E	Excellent	Abilene via MAX	
IL, UIUC	MISR	1133	1133	1133								
MA, Boston Univ	MODIS, MISR	2781	3035	3035	EDC DAAC	17352	9559	Excellent	E	Excellent	Abilene via vBNS+	
MA, MIT	ICESAT	6378	6892	7007	GSFC-ICESAT	68721	40565	Excellent	E	Excellent	Abilene via NISN / MAX	
MD, UMD-College Park	MODIS	2025	2039	2039	GSFC-MAX	151077	118782	Excellent	E	Excellent	Direct Fiber	
MD, NOAA-NESDIS	CERES, AMSR-E	1513	1517	1517	NSIDC	2199	580	Adequate	A	Adequate	Abilene via FRGP, MAX	
MT, Univ of Montana	MODIS	747	819	819	EDC DAAC	17426	12086	Excellent	E	Excellent	Abilene via vBNS+	
NM, LANL	MISR	1033	1033	1033	LaRC DAAC	11423	1272	GOOD	G	GOOD	NISN -> ESNet via CA	
NY, SUNY Stony Brook	CERES	566	573	573	LaTIS	25341	17070	Excellent	E	Excellent	NISN -> Abilene via Chicago	
OH, Ohio State Univ	ICESAT	5678	5992	6307	GSFC-ICESAT	61382	28521	Excellent	A	Excellent	Abilene via NISN / MAX	
OR, Oregon State Univ	CERES, MODIS	6929	7570	7570	LaTIS	24213	10981	GOOD	G	GOOD	NISN -> Abilene	
PA, Penn State	MISR	2642	2642	2642	LaRC DAAC	26180	16969	Excellent	E	Excellent	NISN -> Abilene	
TX, Texas A & M	AMSR-E	1200	1200	1200								
TX, U Texas-Austin	ICESAT	10430	10745	11060	GSFC-ICESAT	40455	27064	GOOD	G	GOOD	Abilene via NISN / MAX	
VA, LaRC - SAGE III MOC	SAGE III	200	200	200	GSFC-CSAFS	6598	3821	Excellent	E	Excellent	NISN SIP	
WA, NOAA PNNL	MISR	1442	1442	1442	LaRC DAAC	15086	7674	Excellent	E	Excellent	NISN -> ESNet via Chicago	
WA, U Washington	ICESAT	11003	11374	11746	GSFC-ICESAT	47801	19401	GOOD	G	GOOD	Abilene via NISN / MAX	
WI, U of Wisc.	MODIS, CERES, AIRS	14788	16461	16461	GDAAC	53438	33357	GOOD	G	GOOD	Abilene via MAX	
Brazil, INPE	HSB	1024	(Deleted)					N/A	L	N/A	Abilene -> AMpath-> ANSP	
Canada, U. of Toronto	MOPITT	612	612	612	LaRC DAAC	1425	1300	GOOD	G	GOOD	NISN T1	NISN-CA*net4
France, Palaiseau	CERES	206	206	206								
Italy, Ispra (JRC)	MISR	517	517	517	LaRC DAAC	3098	1390	GOOD	G	GOOD	NISN-UUNET-Milan	
Netherlands (KNMI)	OMI	1024	1024	1024	GSFC-MAX	34397	24787	Excellent	E	Excellent	Abilene --> Chi -> Surfnet	
Russia, Moscow (CAO)	SAGE III	26	26	26	CAO-->LaRC-N	158	156	Excellent	E	Excellent	NISN -> Moscow	
UK, Oxford	HIRDLS	512	512	512	GSFC-MAX	4078	3279	Excellent	E	Excellent	Abilene->JAnet (NY)	
UK, London (UCL)	MISR, MODIS	1033	1033	1033	LaRC DAAC	17037	4713	Excellent	E	Excellent	Abilene->JAnet (NY)	

*Rating Criteria:	
Excellent	Median of Daily worst hours >= 3 *Requirement
GOOD	Median of Daily worst hours >= Requirement
Adequate	Median of Daily worst hours < Requirement <= Median of Daily Medians
LOW	Requirement > Median of Daily Medians
BAD	Requirement > 3 * Median of Daily Medians

Rating	Current May-04	Last Report	Future: Apr-05
Excellent	17	15	16
GOOD	9	10	10
Adequate	3	4	3
LOW	2	2	2
BAD	0	0	0
Total	31	31	31
GPA	3.32	3.23	3.29

EOS QA SCF Sites
Daily Median and Worst Performance as a percent of Requirements



Details on individual sites:

Each site listed below is the DESTINATION for all the results reported in that section. The first test listed is the one on which the rating is based -- it is from the source most relevant to the driving requirement. Other tests are also listed. The three values listed are derived from [nominally] 24 tests per day. For each day, a daily best, worst, and median is obtained. The values shown below are the medians of those values over the test period.

1) AL, NSSTC (UAH) (aka GHCC)

Rating: ↓ Good → **Adequate**

Teams: CERES, AMSR

Domain: nsstc.uah.edu

Web Page: http://ensight.eos.nasa.gov/Missions/terra/NSSTC.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC LaTIS	9.7	9.6	4.5	NISN SIP
GSFC	23.6	22.5	18.2	NISN SIP

Requirements:

Source Node	Date	mbps	Rating
LaRC LaTIS	Oct '03	4.9	Adequate
LaRC LaTIS	May '04	6.2	Adequate
LaRC LaTIS	Apr '05	7.1	Adequate

Comments: Daily worst thruput from LaTIS dropped from about 8 mbps to below the requirement, dropping the rating to "Adequate". Thruput from GSFC has been stable since April '03.

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2) AZ, Tucson (U of AZ):

Rating: Continued **Good**

Teams: MODIS

Domain: arizona.edu

Web Page: http://ensight.eos.nasa.gov/Missions/terra/ARIZONA.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
EDC LPDAAC	18.1	11.5	5.7	Abilene via vBNS+ / Chicago
GSFC	24.3	19.7	11.6	Abilene via MAX
LaRC DAAC	26.2	25.5	18.4	Abilene via MAX

Requirements:

Source Node	FY	mbps	Rating
EDC LPDAAC	'03 - '05	2.8	Good

Comments: The ratings are based on the MODIS flow from EDC (There is no longer a requirement from LaRC, as the MISR team has all moved away from Arizona).

Performance was stable from EDC and LaRC, and GSFC improved to the same levels. The rating from EDC remains "Good"

3) CA, JPL:

Ratings: GSFC: Continued Low
LaRC: ↓ Adequate → Low

Teams: MISR, AIRS, TES, MLS, ASTER
Domain: jpl.nasa.gov
Web Pages: http://ensight.eos.nasa.gov/Missions/terra/JPL_MISR.shtml
http://ensight.eos.nasa.gov/Missions/aqua/JPL_AIRS.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC DAAC → MISR	19.8	17.3	10.2	EMSnet (ftp)
GSFC DAAC → AIRS	16.5	14.7	2.5	NISN SIP
GSFC → MISR	12.7	12.3	11.6	NISN PIP

Requirements:

Source Node	FY	mbps	Rating
LaRC DAAC	'03 - '05	18.5	Low
GSFC DAAC	'04, 05	18.1	Low

Comments:. During this period, the iperf testing from LaRC to JPL-MISR was down due to firewall and other changes at JPL (has since been restored), so testing via ftp is used for this rating. FTP uses only a single TCP stream, and is limited by the TCP window sizes, while multiple iperf streams had been used previously. So although the network appears stable (since July '03), the daily median is now below the requirement, and the rating drops to "Low".

Testing to AIRS is from GDAAC, and uses SIP. Thruput from GDAAC to JPL-AIRS has been generally steady since September '02. The daily median is still below the requirement, thus a FY'03-'05 rating of "LOW". The low value for the daily worst indicates that there is considerable congestion in this path.

Testing from the GSFC campus to JPL has been routed via NISN PIP since September '02, with very steady performance.

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4) CA, RSS: (Santa Rosa):

Ratings: N/A → Adequate

Teams: AMSR
Domain: remss.com
Web page: http://ensight.eos.nasa.gov/Missions/aqua/RSS.shtml

Test Results:

Source Node	Medians of daily tests (Mbps)			Route
	Best	Median	Worst	
JPL PODAAC	2.83	2.74	0.93	NISN SIP: 2 x T1

Requirements:

Source Node	FY	Mbps	Rating
JPL PODAAC	'04 – '05	2.70	Adequate

Comments: Performance testing resumed in mid June (had stopped in early November), when a new test host was configured. Thruput is the same as had been very stable since August '02, rated "Adequate", as good as can be expected from a pair of T1s.

Note: RSS also has a requirement to flow data to NSSTC (see #1); it is not tested. The requirement is 900 kbps in FY '03, but grows to 3.1 mbps in FY'04 and 4.4 mbps in FY'05. While the FY'03 requirement is achievable with the 2 x T1 configuration, the FY'03 and '04 flows are not.

5) CA, UCSB:

Ratings: GSFC: Continued **Excellent**
EDC: Continued **Excellent**

Teams: MODIS
Domain: ucsb.edu
Web page: http://ensight.eos.nasa.gov/Missions/terra/UCSB.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-DAAC	18.2	16.3	14.5	Abilene via NISN / MAX
EDC-LPDAAC	21.7	14.9	7.9	Abilene via vBNS+ / Chicago

Requirements:

Source Node	FY	mbps	Rating
GSFC-DAAC	'04, '05	3.1	**Excellent**
EDC-LPDAAC	'04, '05	2.2	**Excellent**

Comments: The requirements are split between EDC and GSFC. Performance from both GSFC and EDC is very steady. The rating remains "Excellent" from both sites.

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6) CA, UCSD (SIO):

Ratings: GSFC: ↑ Good → **Excellent**
LaTIS: Continued **Excellent**

Teams: CERES, ICESAT
Domain: ucsd.edu
Web Page: http://ensight.eos.nasa.gov/Missions/terra/UCSD.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-ICESAT	77.6	49.6	21.1	Abilene via NISN / MAX
LaTIS	26.3	25.5	21.7	Abilene via NISN / Chi

Requirements:

Source Node	FY	mbps	Rating
GSFC	'04, '05	6.8, 7.0	**Excellent**
LaTIS	'02 - '05	0.26	**Excellent**

Comments: The rating is based on testing from the ICESAT SCF at GSFC. The daily worst from ICESAT improved to a bit over 3 x the requirement, improving the rating to "Excellent".

Performance from LaTIS has been stable since the LaTIS test node was restored on 30 April '03. The CERES requirements are much lower than ICESAT, so the LaTIS rating continues as "Excellent".

7) CO, Colo State Univ.:

Rating: ↑ Adequate → **Good**

Teams: CERES
Domain: colostate.edu
Web page: http://ensight.eos.nasa.gov/Missions/terra/COLO_ST.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaTIS	4.32	4.12	3.13	Abilene via NISN / Chicago
GSFC	7.13	6.94	6.22	Abilene via MAX

Requirements:

Source Node	FY	mbps	Rating
LaTIS	'04, '05	2.05	**Good**

Comments: Performance from both LaTIS and GSFC has been pretty stable since December '03. The daily worst is now above the requirement for '04 through '05, so the rating improves to "Good". Performance from GSFC would rate as "Excellent".

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8) CO, NCAR:

Ratings: LaRC: Continued **Excellent**
GSFC: Continued **Excellent**

Teams: MOPITT, HIRDLS
Domain: scd.ucar.edu
Web page: http://ensight.eos.nasa.gov/Missions/terra/NCAR.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC DAAC	18.4	17.2	12.1	Abilene via NISN / Chicago
GSFC-MAX	48.0	45.3	35.0	Abilene via MAX
EDC	50.7	40.7	26.2	Abilene via vBNS+ / Chicago
ARC	45.6	42.7	39.2	Abilene via CalRen

Requirements:

Source Node	FY	mbps	Rating
LaRC DAAC	'03 - '05	2.4	**Excellent**
GSFC	'04, '05	3.1	**Excellent**

Comments: Performance from GSFC and LaRC DAAC was stable. The median daily worst remains above 3 x the requirement, so the ratings remain "Excellent"".

The performance host at NCAR has been down since early April, so the data above is based on the April testing only.

9) FL, Univ. of Miami:

Rating: GSFC: Continued **Excellent**
LaRC: Continued **Excellent**

Teams: MODIS, MISR
Domain: rsmas.miami.edu
Web page: http://ensight.eos.nasa.gov/Missions/terra/MIAMI.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-DAAC	194.6	155.8	91.2	Abilene via MAX
GSFC-MAX	239.4	188.8	96.1	Abilene via MAX
LaRC DAAC	26.5	24.7	16.5	Abilene via NISN / Chicago

Requirements:

Source Node	FY	mbps	Rating
GSFC	'04 - '05	18.8	**Excellent**
LaRC DAAC	'04 - '05	1.1	**Excellent**

Comments: Thruput from GDAAC has been stable since the GDAAC firewall upgrade in late November '03. The rating remains "Excellent".

Performance from LaRC DAAC has been stable since May '03, also rating "Excellent".

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10) MA, Boston Univ:

Ratings: EDC: Continued **Excellent**
LaRC: Continued **Excellent**

Domain: bu.edu
Teams: MODIS, MISR
Web Page: http://ensight.eos.nasa.gov/Missions/terra/BU.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
EDC DAAC	24.4	17.4	9.6	Abilene via vBNS+ / Chicago
GSFC	90.3	80.5	44.7	Abilene via MAX
LaRC DAAC	26.4	24.0	13.6	Abilene via NISN / Chicago

Requirements:

Source Node	FY	mbps	Rating
EDC DAAC	'04 - '05	3.0	**Excellent**
LaRC DAAC	'04 - '05	1.2	**Excellent**

Comments: Performance from all sources was affected by a BU routing problem during May (NOX was not advertising the BU route to Abilene). Other than that period, performance from all sources remained stable. The rating remains "Excellent".

11) MA, MIT:

Rating: Continued **Excellent**

Teams: ICESAT
Domain: mit.edu
Web Page: http://ensight.eos.nasa.gov/Missions/icesat/MIT.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-ICESAT	79.1	68.7	40.6	Abilene via NISN / MAX

Requirements:

Source Node	FY	mbps	Rating
GSFC	'04, '05	6.7, 7.0	**Excellent**

Comments: Median performance from GSFC to MIT has been very stable at the above values since November '03. The rating remains "Excellent".

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12) MD, NOAA-NESDIS (Camp Springs)

Rating: Continued **Adequate**

Teams: CERES, AMSR-E
Domain: nesdis.noaa.gov
Web Pages: http://ensight.eos.nasa.gov/Missions/terra/NOAA_Camp_Springs.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
NSIDC	7.82	2.20	0.58	FRGP / Abilene / MAX
LATIS	11.56	7.03	2.13	
GSFC-MODIS	21.10	13.69	3.59	Peering at MAX

Requirements (QA only):

Source Node	FY	mbps	Rating
NSIDC	'02 – '05	1.52	**Adequate**
LATIS	'02 – '05	0.21	**Excellent**

Comments: The Best:Worst ratio is 5.4:1 from LaTIS and 6:1 from GSFC; this is indicative of congestion at NOAA. But the higher 13:1 ratio from NSIDC indicates there is also congestion in the path from NSIDC. The median daily worst from NSIDC is below the requirement, thus a rating of "Adequate". There is less noise from LaTIS, and a lower requirement; rating "Excellent".

13) MD, Univ. of Maryland:

Rating: Continued **Excellent**

Teams: MODIS
Domain: umd.edu
Web Pages: http://ensight.eos.nasa.gov/Missions/terra/UMD_SCF.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-MAX	168.1	151.1	118.8	Direct Fiber OC-12 / MAX / SCF
EDC	128.0	109.8	49.6	VBNS+ / Abilene / MAX / SCF
NSIDC	92.9	76.9	51.1	Abilene / MAX / SCF

Requirements (QA only):

Source Node	FY	mbps	Rating
GSFC DAAC	'02 – '05	2.0	**Excellent**

Comments: Performance from GSFC-MAX was at a few slightly different stable levels this period. Somewhat noisy but long term stable from EDC and NSIDC.

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14) MT, Univ of Montana:

Rating: Continued **Excellent**

Teams: MODIS
Domain: ntsg.umt.edu
Web Page: http://ensight.eos.nasa.gov/Missions/terra/MONT.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
EDC LPDAAC	18.0	17.4	12.1	VBNS+ / Chi / Abilene
GSFC	40.3	36.7	27.0	MAX / Abilene
NSIDC	41.3	36.5	23.9	CU / FRG / Abilene

Requirements:

Source Node	FY	mbps	Rating
EDC LPDAAC	'04 - '05	0.82	**Excellent**

Comments:. Stable performance from all sources. With the low requirements, the rating continues as "Excellent".

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15) NM, LANL:

Rating: Continued **Good**

Teams: MISR
Domain: lanl.gov
Web Page: http://ensight.eos.nasa.gov/Missions/terra/LANL.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC DAAC	18.1	11.4	1.3	NISN SIP / MAE-W (Ames) / ESnet
GSFC	11.4	7.7	1.4	MAX / ESnet

Requirements:

Source Node	FY	mbps	Rating
LaRC DAAC	'03-'05	1.03	**Good**

Comments: Performance from both LDAAC and GDAAC remained noisy, but the daily worst is still above the requirement, so the rating continues "Good".

16) NY, SUNY-SB:

Rating: Continued **Excellent**

Teams: CERES, MODIS
Domain: sunysb.edu
Web Page: http://ensight.eos.nasa.gov/Missions/terra/SUNYSB.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaTIS	26.7	25.3	17.1	NISN SIP / MAX / Abilene / NYSERnet
GSFC	64.9	48.3	35.6	MAX / Abilene / NYSERnet

Requirements:

Source Node	FY	mbps	Rating
LaTIS	'02-'05	0.57	**Excellent**

Comments: Performance from LaTIS has been generally stable since October '03. Also stable performance from GSFC. With the low requirement, the rating remains "Excellent".

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17) OH, Ohio State Univ:

Rating: ↑ Adequate → **Excellent**

Teams: ICESAT
Domain: ohio-state.edu
Web Page: http://ensight.eos.nasa.gov/Missions/icesat/OHIO_STATE.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-ICESAT	77.1	61.4	28.5	Abilene via NISN / MAX

Requirements:

Source Node	FY	mbps	Rating
GSFC	'04, '05	6.0, 6.3	**Excellent**

Comments: Performance was much less noisy from ICESAT this period, increasing the median daily worst above 3 x the requirement, improving the rating to "Excellent".

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18) OR, Oregon State Univ:

Ratings: LaTIS: Continued **Good**
GSFC: Continued **Excellent**

Domain: oce.orst.edu
Teams: CERES, MODIS
Web Page: http://ensight.eos.nasa.gov/Missions/terra/ORST.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaTIS	26.2	24.2	11.0	Abilene via NISN / Chicago
JPL	66.1	58.4	15.3	Abilene via CalRen
GSFC	33.6	32.0	8.7	Abilene via MAX

Requirements:

Source Node	FY	mbps	Rating
LaTIS	'04 - '05	7.5	**Good**
GDAAC	'02 - '05	0.25	**Excellent**

Comments: Performance from all sources stable (but noisier than expected from nearby JPL), rating remains "Good".

19) PA: Penn State Univ:

Rating: Continued **Excellent**

Teams:MISR Domain: psu.edu

Web Page: http://ensight.eos.nasa.gov/Missions/terra/PENN_STATE.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC DAAC	26.9	26.2	17.0	Abilene via NISN / MAX
GSFC	76.5	76.1	72.7	Abilene via MAX

Requirements:

Source Node	FY	mbps	Rating
LaRC DAAC	'03-'05	2.6	**Excellent**

Comments: Performance from both sources was very stable; the rating remains "Excellent".

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20) TX: Univ. Texas - Austin

Rating: Continued **Good**

Teams: ICESAT Domain: utexas.edu

Web Page: http://ensight.eos.nasa.gov/Missions/icesat/TEXAS.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-ICESAT	43.4	40.5	27.1	Abilene via NISN / MAX
GSFC-MAX	44.5	44.2	42.9	Abilene via MAX

Requirements:

Source Node	FY	mbps	Rating
GSFC	'03, 05	10.7, 11.1	**Good**

Comments: Performance from GSFC-MAX and ICESAT-SCF at GSFC via Abilene has been very stable since July '03; with some congestion indicated at ICESAT. The rating remains "Good".

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21) VA, LaRC: SAGE III MOC:

Rating: Continued **Excellent**

Teams: SAGE III Domain: larc.nasa.gov

Web Page: http://ensight.eos.nasa.gov/Missions/sage/SAGE_MOC.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-SAFS	6.98	6.60	3.82	NISN SIP (?)

Requirements:

Source Node	FY	mbps	Rating
GSFC SAFS	'02 – '05	0.20	**Excellent**

Comments: Stable thruput since upgrade of LaRC MOC machine in Feb '03 (median was 3.9 mbps with old host).

Note: it is not clear that the route is actually SIP…NISN PIP is often used between NASA centers, and traceroutes from GSFC-SAFS are blocked.

22) WA, Pacific Northwest National Lab:

Rating: Continued **Excellent**

Teams: MISR
Domain: pnl.gov
Web Page: http://ensight.eos.nasa.gov/Missions/terra/PNNL.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC DAAC	15.6	15.1	7.7	ESnet via NISN - Chicago
GSFC	18.9	18.8	18.5	ESnet via MAX

Requirements:

Source Node	FY	mbps	Rating
LaRC DAAC	'03-'05	1.4	**Excellent**

Comments: Performance from LaRC to PNNL remains somewhat noisy, but the rating remains "Excellent". Thruput has been extremely stable from GSFC.

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23) WA, Univ Washington:

Rating: Continued **Good**

Teams: ICESAT
Domain: washington.edu
Web Page: http://ensight.eos.nasa.gov/Missions/icesat/UW.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-ICESAT	77.1	47.8	19.4	Abilene via NISN/MAX
GSFC-MAX	69.4	68.9	64.3	Abilene via MAX

Requirements:

Source Node	FY	mbps	Rating
GSFC	'04, '05	11.3, 11.7	**Good**

Comments: Performance from ICESAT-SCF at GSFC is noisier than from GSFC-MAX. The median daily worst remains above the requirement; keeping the rating as "Good" – would be "Excellent" from GSFC-MAX.

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24) WI, Univ. of Wisconsin:

Ratings: GSFC: Continued **Good**
LARC: Continued **Adequate**

Teams: MODIS, CERES, AIRS
Domain: ssec.wisc.edu
Web Page: http://ensight.eos.nasa.gov/Missions/terra/WISC.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
G-DAAC	83.9	53.4	33.4	MAX / Abilene / Chi / MREN
LaTIS	12.3	9.3	3.6	NISN / Chicago / MREN

Requirements:

Source Node	FY	mbps	Rating
GSFC	'04 - '05	16.5	**Good**
LaRC Combined	'03, '04	6.8, 7.5	**Adequate**

Comments: Performance from GDAAC improved this period – the median was 44 mbps last period. The rating remains "Good". Performance from LaTIS was stable; the rating from LaRC remains "adequate".

25) Brazil, INPE:

Rating: N/A
Team: HSB
Domain: inpe.br
Web Page: http://ensight.eos.nasa.gov/Missions/aqua/INPE_HSB.shtml

Test Results: None

Requirements: (2 ISTs only): **Deleted**

Source Node	FY	mbps	Rating
GSFC EOC	'02 – '04	1.02	N/A

Comments: Requirement deleted, due to HSB failure. Testing stopped.

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26) Canada, Univ of Toronto:

Rating: Continued **Good**
Team: MOPITT
Domain: physics.utoronto.ca
Web Page: http://ensight.eos.nasa.gov/Missions/terra/TORONTO.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC DAAC	1.43	1.43	1.30	NISN / GSFC / T1
LaRC DAAC	16.6	14.5	9.8	NISN / Chicago / CA*net4
GSFC	1.43	1.43	1.33	NISN / T1
GSFC	13.6	13.3	12.3	MAX / Abilene / Chicago / CA*net4

Requirements:

Source Node	FY	kbps	Rating
LaRC DAAC	'02 - '04	100	**Excellent**
GSFC EOC	'02 - '04	512	**Good**
Combined	'02 - '04	612	**Good**

Comments: Performance from both LDAAC (Source of QA data) and GSFC (Source for IST) via NISN dedicated T1 is very steady. Since both flows are combined together on the T1, the performance compared to the combined requirement rates as "Good".

Performance via CA*net4 from GSFC and LaRC has been stable since October '03. Ratings via this path from either source would be "Excellent".

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27) Italy, EC - JRC:

Rating: Continued **Good**
Teams: MISR
Domain: ceo.sai.jrc.it
Web Page: http://ensight.eos.nasa.gov/Missions/terra/JRC.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC DAAC	3.18	3.10	1.39	NISN / UUnet / Milan
GSFC-NISN	3.42	3.16	1.72	NISN / UUnet / Milan

Requirements:

Source Node	FY	kbps	Rating
LaRC DAAC	'02 – '05	517	**Good**

Comments: Performance stable from both sources since July '03; the rating remains "Good"

28) Netherlands, KNMI: Rating: Continued **Excellent**

Teams: OMI Domain: nadc.nl
Web Pages: http://ensight.eos.nasa.gov/Missions/aura/KNMI_OMIPDR.shtml
http://ensight.eos.nasa.gov/Missions/aura/KNMI.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC-MAX → OMI PDR Server	36.1	34.4	24.8	MAX / Abilene/ Chi / Surfnet
GSFC-MAX → KNMI Test Node	92.1	92.1	91.8	MAX / Abilene/ Chi / Surfnet
GSFC-NISN → KNMI Test Node	21.6	6.1	1.7	NISN / Chi / Surfnet

Requirements: (2 ISTs Only)

Source Node	FY	Mbps	Rating
GSFC	'04 – '05	1.02	**Excellent**

Comments: Performance via Abilene and Surfnet is very stable to both the OMI PDR server and KMNI Test node. This is exceptionally good performance for US to Europe!

However, the NISN route exhibits much lower performance and significant noisiness. **Therefore, it is important that all servers at GSFC which communicate with KNMI have access to MAX.**

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29) Russia, CAO (Moscow): Rating: Continued **Excellent**

Teams: SAGE III Domain: mipt.ru
Web Pages: http://ensight.eos.nasa.gov/Missions/sage/CAO.shtml
http://ensight.eos.nasa.gov/Missions/sage/LARC_SAGE.shtml

Test Results:

Source → Dest	Medians of daily tests (kbps)			Route
	Best	Median	Worst	
CAO → LaRC	159	158	156	MIPT / TCnet / NISN SIP
CAO → LaRC	1179	1137	565	Commodity Internet
LaRC → CAO	144	140	117	NISN SIP / TCnet / MIPT
LaRC → CAO	1460	1369	528	Commodity Internet

Requirements:

Source → Dest	FY	kbps	Rating
CAO → LaRC	'02 – '05	26	**Excellent**
LaRC → CAO	'02 – '05	26	**Excellent**

Comments: Performance testing running since November '02, with dual routes. Performance on the NISN dedicated circuit to Moscow, then TCnet (NASA Russian ISP) tunnel to CAO ISP (MIPT) is extremely steady in both directions, with a rating of "Excellent".

The dual route configuration also allows testing via the commodity internet route. Performance via that route is much better, but is also more variable, and also would rate "Excellent".

30) UK, London: (UCL SCF)

Rating: ↑ Adequate → **Excellent**

Teams: MODIS, MISR
Domain: ucl.ac.uk
Web Page: http://ensight.eos.nasa.gov/Missions/terra/UCLSCF.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
LaRC DAAC	19.0	17.0	4.7	NISN / Level3 (San Jose) / London
GSFC MAX	48.8	48.2	45.7	MAX / Abilene / NY / JAnet

Requirements

Source Node	FY	mbps	Rating
LaRC DAAC	'02 – '05	1.03	**Excellent**

Comments: Route from LDAAC still via NISN / Level3 peering in San Jose (since approx January '04). The rating on this route is now "Excellent".

Performance from GSFC remains very stable and much higher than the NISN / Level3 route.

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31) UK, Oxford:

Rating: Continued **Excellent**

Teams: HIRDLS
Domain: ox.ac.uk
Web Page: http://ensight.eos.nasa.gov/Missions/aura/OXFORD.shtml

Test Results:

Source Node	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC	4.13	4.08	3.28	MAX / Abilene / NY / JAnet

Requirements: (IST Only)

Source Node	FY	kbps	Rating
GSFC	'03 – '04	512	**Excellent**

Comments: Very steady performance continues since May '03, rating "Excellent" compared to the IST requirement.

Test Results to other EOS HIRDLS UK Sites (Requirements TBD):

Web Page: http://ensight.eos.nasa.gov/Missions/aura/UK_RAL.shtml

Source → Dest	Medians of daily tests (mbps)			Route
	Best	Median	Worst	
GSFC → RAL	37.9	27.2	11.5	MAX / Abilene / NY / JAnet

Comments: Thruput to RAL remains somewhat noisy, but quite good, with occasional step changes. .